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CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

25X1A

COUNTRY France

SUBJECT Forges et Ateliers de Constructions Electriques de Jeumont/Transformers and Capacitors

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1. Transformers

The Jeumont Works employes about 500 in its transformer department and makes a variety of transformer types and sizes including distribution and power transformers, air cooled transformers, and, to a small extent, the askarel type of distribution transformers. Transformers up to 225 KV in the power type are manufactured and up to 60 KV in the instrument type. The air cooled type operates at a maximum of 60°C rise from a 50°C base. These transformers are considered to be of the Class A insulation type.

In general, the factory at Jeumont is well kept and the employees appear to be of a good calibre. However, the factory is old and apparently no material development is being carried on. The materials of construction used are generally purchased and little if any knowledge of their composition or detailed behavior is known. It seemed that the Plant operates more as an assembly plant. The laboratory activity was noticeable by its absence.

Items of interest with regard to transformers include:

(a) The treatment of transformers is at 95-100°C for 4 days in vacuum after a period of pre-bake at 95°C in a current of dried air to "remove most of the moisture".

(b) De-gassed oil is used in the higher voltage transformers. The de-gassing is at relatively poor vacuum over baffle plates.

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(c) Conservators are being used on most transformers irrespective of size. These hold roughly 10% of the oil volume of the transformers. They are merely cylindrical tanks - entirely open inside and the oil at 30°C has its level at the mid-point of the tank. At zero degrees the oil conservator is empty. At 100°C it is said to be "full".

(d) The oil conservator is connected by a straight pipe to the main tank.

(e) The conservator transformer is cheaper than the nitrogen gas cushion design.

(f) Coils are of the disc type with pressboard spacers. During drying a shrinkage of 4% occurs in the coil structure. They are searching for ways to reduce this shrinkage.

(g) Substantially no wood is used in the transformer, all such parts being made of bonded pressboard.

(h) Conductor insulation is .004" -.006" kraft paper depending on the type of coil manufactured.

(i) Wire enamel is called Duroflex and is similar to Formex. No trouble is being experienced.

(j) Coils are varnished coated with a glyceryl-phthalic acid resin, red colored. It apparently is similar to our 1201 glyptal and is used only for mechanical purposes in binding the coil. Insulation strength is obtained entirely from oil treated paper.

(k) All leads are paper insulated. No varnished cloth is used. No creped paper is used in lead construction.

(l) Bakelite varnish is used as a core plate varnish. It is not satisfactory and an improved varnish is sought.

(m) All transformers were said to be impulse tested using a 1 x 50 micro-second wave. The impulse generator gives a maximum of 2,000,000 volts and is located adjacent to the manufacturing floor.

(n) All conductors are copper. Aluminum was used during the war. No trouble was experienced with aluminum. Jointing was made by welding.

(o) Air cooled transformers are insulated with asphalt treatment. Asphalt bonded mica is used. Substantially no Samica is being used in the transformer construction. The maximum operating temperature is with a 60°C rise from a 50°C base. Silicones are being studied for use in air cooled transformers but none are now in use. A temperature rise of 80°C from a 50°C base is being considered for silicones. The askarel type of transformer is preferred.

(p) No transformers for mining are being made.

(q) Instrument transformers are oil filled.

(r) Bushings are of the usual porcelain design; including oil filled bushings.

2. Cables

Items of interest from the cable standpoint were:

(a) All types of cable are manufactured.

(b) A 132 KV submarine cable was being built for test by the Electricite de France. It did not appear to be of special novelty to me.

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(c) The longest taping machine had 45 heads, 4 rolls of paper per head.

(d) The Domenach type of thin paper cable was said to be good. Jeumont is making thin paper cable but not so thin as at the Cables des Lyons.

(e) Both synthetic and natural rubber cable is being manufactured, depending on the cost factor.

(f) 1400 men are employed in the cable department.

(g) The cable treating tanks are normal; no novelty observed.

(h) Kraft paper is the cable dielectric. Solid cable uses oil and 25% rosin. Pirelli cable is of the standard type with no novelty observed.

(i) Cable compounds are purchased from Dussek in England.

(j) Aluminum conductor cable was made during the war. No trouble was reported.

(k) The jointing of the channel cable (Item #b) [redacted] 25X1X there (experimental work). This appears to be the main problem in the channel cable.

(l) Jeumont draws its own copper and aluminum wire.

(m) Armored cable uses a steel armor.

(n) Cables are dried by heat and vacuum but no current is passed through the cable conductor to furnish the heat. It all comes from steam coils in the vacuum tank.

(o) Jeumont makes magnet wire. The enamel is a modification of Formex. No real information on what the modification is. [redacted] 25X1X

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